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STEVAL-ISA010V1

Ultra wide range dual output back converter demonstration board based on the VIPER16

Data brief

Features

- Input voltage Vin: 85 - 500 VAC (f: 45 - 66 Hz)
- Output voltages:
  - V1= 12 V ± 10%
  - V2= 5 V ± 4%
- Output current: 150 mA total (5 V and 12 V output) output current for full input voltage range
- Standby: 96 mW at 230 VAC
- Short-circuit protection
- PCB type and size:
  - FR4, single side 70 µm
  - dim.: 27 x 45 mm
- Isolation: non isolated - N connected to output GND
- EMI: In accordance with EN55022 - class B
- EMC: surge - IEC 61000-4-5 - 2 kV
- EMC: burst - IEC 61000-4-4 - 8 kV
- RoHS compliant



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Description

This demonstration board based on VIPER16 is designed as an example of a simple non-isolated auxiliary power supply for a range of input voltages from 85 VAC to 500 VAC.

There is an ever-increasing demand for small power supplies capable of working without voltage range limitations, even at nominal levels of 400 VAC and 415 VAC, respectively. The real voltage level can reach 500 VAC (415 V + 20%).

The major markets for this type of SMPS are home appliances and metering.

The VIPER16 device includes an 800 V rugged power switch, a PWM controller, programmable overcurrent, overvoltage, overload, a hysteretic thermal protection, soft-start and safe auto-restart after any fault condition removal. Burst mode operation at light load combined with the very low consumption of the device helps to meet standby energy-saving regulations.

The significant benefit of this new chip derives from the jitter of the switching frequency and the possibility to supply the chip directly from the DC HV bus, so auxiliary supply is not mandatory.

The VIPER16 is suitable for flyback or buck topologies and thanks to an internal self-supply circuit it does not require an auxiliary supply.

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1 Circuit schematic and PCB layout

Figure 1. Schematic diagram

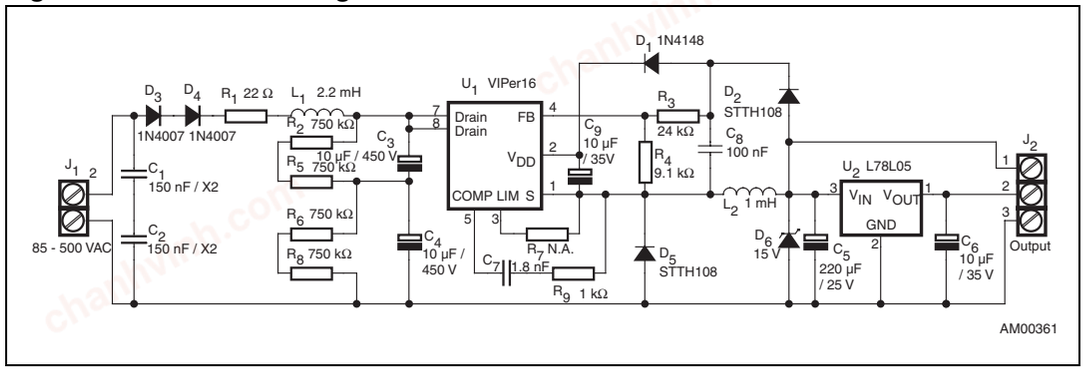
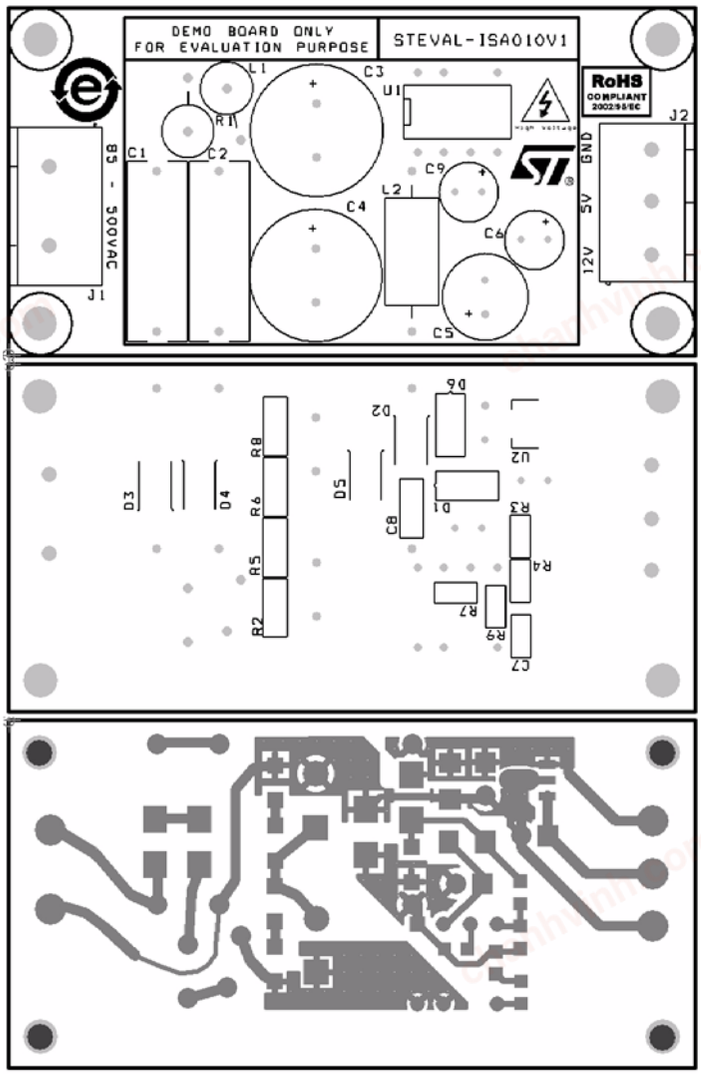


Figure 2. PCB layout of the buck converter (top, bottom, bottom layout)



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2 Revision history

Table 1. Document revision history

Date	Revision	Changes
06-May-2009	1	Initial release.

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